

Amendment dated 12/01/04  
Office Action dated 09/03/04

Application No. 10/021,917

### **REMARKS**

Claims 1-53 are pending. Claims 1-53 are rejected by this Office Action.

The Applicant thanks the Examiner for considering all of the references cited in the Information Disclosure Statement filed February 22, 2002.

#### **Claim Rejections – 35 U.S.C. § 112**

Claims 1, 11, 16-20, 24, 29, and 44 are rejected by the Office Action as allegedly being indefinite under 35 U.S.C. 112, second paragraph. The Office Action alleges that “It is not readily apparent what is meant by the recitation of ‘class’ in the claims or how a class relates to the business operation.” The claims should be construed in the context of the specification. For example, referring to Figure 1, the specification discloses (Page 6, lines 15-16):

In Eq. (1-1) there are  $k$  classes  $N_i$  ( $i=1, \dots, k$ ) of items corresponding to the three items 104, 106, 108 in Figure 1. Each  $j \in N_i$  corresponds to a row index for an item in Figure 1. The allocation variable  $x_{ij}$  has the value 1 if and only if the allocation from row  $j$  is chosen for the class  $N_i$ ; analogously to the highlighted solution 116 in Figure 1.

In the above example, items A, B, and C may correspond to three products that a retailer buyer may stock in a business operation. (Page 5, lines 13-15.) In accordance with MPEP § 2173.02, the claim language must be analyzed, not in a vacuum, but in light of the content of the particular application disclosure. Thus, the Applicant respectfully submits that claims 1, 11, 16-20, 24, 29, and 44 are definite under 35 U.S.C. 112, second paragraph. The Applicant requests reconsideration of claims 1, 11, 16-20, 24, 29, and 44.

#### **Claim Rejections – 35 U.S.C. § 101**

Claims 1-33 are rejected by the Office Action for allegedly being directed to non-statutory subject matter under 35 U.S.C. 101. The Office Action alleges that “Although the recited process produces a useful, concrete, and tangible result, since the claimed invention, as a whole, is not within the technological arts, as explained above, claims 1-33 are directed to non-statutory subject matter. Regarding claim 1, the Applicant has amended the claim to be directed to “A method of determining allocations in a business operation to maximize profit on a computer system” in order to claim a process limited on a computer system. Thus, he claimed

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invention of claim 1 provides a useful, concrete, and tangible result that is limited to the technological arts. Similarly, the Applicant has amended claim 11 to be directed to "A method of determining physical allocations in a business operation to maximize profit on a computer system" and claim 24 to be directed to "A method of determining economic allocations in a business operation to maximize profit on a computer system." Both claims 11 and 24 are directed to statutory subject matter for at least the above reasons. Moreover, claims 2-10, 12-13, and 25-33 depend from claims 1, 11, and 24 and are directed to statutory subject matter. Thus, the Applicant requests reconsideration of claims 1-33.

### Claim Rejections – 35 U.S.C. § 102

Claims 1-53 are rejected by the Office Action as being allegedly anticipated by US 5,216,593 (Dietrich) under 35 U.S.C. 102(b). Regarding claim 1, Dietrich does not teach or even suggest the features of "formulating a **Multiple Choice Knapsack Problem** to maximize profit from the profit functions, the cost functions, and a cost constraint" and "solving the **Multiple Choice Knapsack Problem** to determine values for the allocations." (Emphasis added.) Referring to Equation 1-1, the present specification supports the above features by disclosing "The allocation variable  $x_{ij}$  has a value 1 if and only if the allocation from row  $j$  is chosen for the class  $N_i$  analogously to the highlighted solution 116 in Figure 1." (Page 6, lines 17-18.) However, Dietrich merely teaches formulating and solving a Discrete Activity Resource Allocation (DARA) problem and not a Multiple Choice Knapsack Problem (MCKP). For example, Dietrich discloses (Column 4, line 57 – column 5, line 11.):

According to the invention, there is provided a computer implemented procedure for solving a Discrete Activity Resource Allocation (DARA) problem. Briefly stated, the procedure begins by reducing all activities and resources which do not contribute to maximizing benefit. Thus, all infeasible and non-profitable activities are discarded and all non-constraining resources are discarded, thereby considerably simplifying the solution to the problem. Next, an automatic mathematical model formulation of the DARA problem is performed. Based on this model, a list of "cliques and covers" are generated.

The constraints generated ("cliques and covers") can best be understood by way of example. Consider, for example, the resource availability constraint  $10\delta_1 + 11\delta_2 + 18\delta_3 + 15\delta_4 + 17\delta_5 + 26\delta_6 \leq 43$ . The corresponding cardinality constraints would be:

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$\delta_2 + \delta_1 + \delta_6$  1--which means choose at most one of the activities 2 and 6;  
 $\delta_3 + \delta_6$  1--which means choose at most one of the activities 3 and 6;  
 $\delta_2 + \delta_3 + \delta_4 + \delta_5 + \delta_6$  2--which means choose at most two of the activities 2, 3, 4, 5, and 6.

Similarly, claim 11 includes the features of "formulating a Multiple-Choice Knapsack Problem to maximize profit from the profit functions, the cost functions, and a cost constraint" and "solving the Multiple Choice Knapsack Problem to determine values for the physical allocations." Also, claim 24 includes the features of "formulating a Multiple Choice Knapsack Problem to maximize profit from the profit functions, the cost functions, and a cost constraint" and "solving the Multiple Choice Knapsack Problem to determine values for the economic allocations." Claim 34 includes "an optimization-engine-unit, the optimization-engine unit being connected to the data unit and the profit-model unit, the optimization-engine unit including executable instructions for formulating a Multiple Choice Knapsack Problem to maximize profit from the profit functions, the cost functions, and the cost constraint, and for solving the Multiple Choice Knapsack Problem to determine values for the allocations." Claim 44 includes the features of "formulating a Multiple Choice Knapsack Problem to maximize profit from the profit functions, the cost functions, and a cost constraint" and "solving the Multiple Choice Knapsack Problem to determine values for the allocations." Thus, claims 11, 24, 34, and 44 are not anticipated for at least the above reasons. Moreover, claims 2-10, 12-23, 25-33, 35-43 and 45-53 ultimately depend from claims 1, 11, 24, 34, and 44. The Applicant requests reconsideration of claims 1-53.

Additionally, regarding claims 3, 4, 13, 14, 26, 27, 36, 37, 46, and 47, the Applicant is unable to find any teaching or suggestion in Dietrich that even relates to a Poisson model or Markov model. The Applicant requests that a specific teaching be cited in Dietrich. Regarding claims 5, 15, 28, 38, and 48, the Applicant is unable to find any teaching or suggestion in Dietrich that even relates to a normal distribution model. The Applicant requests that a specific teaching be cited in Dietrich.

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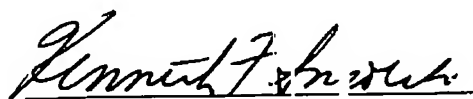
### CONCLUSION

The Applicant has added claim 54, which is supported by the specification as originally filed, e.g., page 8, line 1 – page 10, line 30.

All objections and rejections have been addressed. Hence, it is respectfully submitted that the present application is in condition for allowance, and a notice to that effect is earnestly solicited.

Respectfully submitted,

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